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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of

Kurt Gauler

Art Unit: 1722

Serial No. 10/684,691

Examiner: Emmanuel S. Luk

Filed: October 14, 2003

For: INJECTION MOLDING MACHINE HAVING A SIDE-INJECTION SUB-ASSEMBLY AND A METHOD FOR ACCESSING A HOT PASSAGE DISTRIBUTOR SYSTEM CONTAINED THEREIN

Attorney Docket No: ICO 0252 PUS

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RESPONSE AND REQUEST FOR RECONSIDERATION

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

This is in response to the Official Action dated April 18, 2006. The period for a response which has been extended to August 18, 2006, by the concurrent filing herewith of a request for a one-month extension of time, together with payment of the applicable fee.

In the Action, all 20 of the claim presented in the case, namely claims 1-20, were rejected under 35 U.S.C. §103(a) as being obvious and thus unpatentable over the Cyriax et al. patent (U.S. No. 4,500,274) in view of the Gellert patent (U.S. No. 5,952,016). It is submitted that neither of these references, whether taken individually or in any permissible combination, disclose or suggest the inventive combination of features forming the Applicant's invention as defined in claims 1-20. As a result, the Examiner is asked to reconsider the rejection in view of the comments contained herein.

The Applicant's invention provides a unique system and method for servicing and repairing injection molding systems with hot runner sub-systems. Plastic injection molding operations with hot runner systems require more service than operations with cold runner systems. However, despite the need for service, the machine downtime for servicing injection molding operations (i.e. repairing and replacement of components) must be as low as possible in order to meet commercial production schedules. The types of services that hot runner systems typically need include the exchange of nozzle caps and tips, the exchange of nozzle heaters, the exchange of thermal couples, the exchange of manifold heaters, and the exchange of manifold thermal couples, as well as the repair of plastic leaks, oil leaks, and electrical connections.

The present invention minimizes and highly reduces the amount of downtime necessary for servicing hot runner systems, since up to 90 percent of the servicing can be made without removing the mold and hot runner system from the injection molding machine.

The Cyriax patent does not show a hot runner system at all and instead merely relates to changing a mold in an injection molding machine in a faster manner. The two mold parts are attached together prior to removal and an adapter plate is provided. Although the Gellert patent does disclose a hot runner system, the disclosed system does not allow full access to the complete hot runner system for service while the mold remains on the machine. Only components such as side gate seals and hot tip torpedoes can be exchanged in the Gellert system due to the limited space available for servicing. The injection plates (30, 16, 128) cannot be pulled to the injection site of the machine because there is no access to the screw (36) from the side. Although latches are disclosed holding the ejector retainer plates (132, 138) together, the latches do not hold the ejector and injection sides of the mold together. The hot runner system in Gellert is not designed for quick service, does not allow exchange of nozzle heaters, thermocouples, manifold heaters, manifold thermocouples, and the like while the hot runner system remains on the machine.

In accordance with the present invention, the injection molding machine is opened with the tool (i.e. mold) ejector part being spaced away from the tool injection part by moving the movable platforms on the injection molding machine. The bolts used to attach the tool injection part to the head plate are accessible from the side and can be removed in that manner. This differs significantly from the systems disclosed in the cited references. Also, with the present invention, the head plate is connected to the hot runner manifold with a series of fastening screws which allows the hot runner manifold to remain attached to the head plate while the bolts are removed.

At that point, the tool can again be closed and the two mold halves fastened together. A rotatable bar member is used together with appropriate screws or bolts to hold the two mold halves together. This eliminates any obstruction typically associated with the tool injection part being attached to the hot runner system.

At that point, the injection molding machine can be reopened by moving the movable platform away from the stationary platform. The tool ejection part is carried with the moveable platform away from the tool injection part. As a result, the hot runner system with its manifold and nozzles are then accessible from the side for maintenance, repair, or any other purpose. Typical maintenance at this point can include replacement of gate caps, gate points, nozzle heating members, nozzle sensors and distributor sensors, as well as checking all electrical devices and inspecting for leakage. All of this maintenance can be done while the hot runner system remains fastened to the injection molding machine.

If no further maintenance or repair work is required, then the tool injection part is moved back over the nozzle and the hot runner block. The rotatable bar members are then returned to their original positions. Thereafter, the injection molding machine is reopened and the bolt fasteners are reinserted and utilized to reconnect the tool injection part to the head plate.

If further major maintenance work is required, then a hook member or the like is fastened to the head plate, a crane is attached to the hook member, and the clamps are released. This allows the head plate and hot runner system to be removed from the injection molding machine.

The above-described sequence of steps, as well as the various structure and components which facilitate the method steps and allow it to take place are all unique and are clearly distinguishable from the prior art. Accordingly, in view of the above explanation of the claimed system and process of the present invention, it is requested that the Examiner reconsider and withdraw the rejection based on the Cyriax et al. and Gellert references.

In view of the foregoing, it is submitted that all of the claims remaining in the case, namely claims 1-20, are in proper form and patentably distinguish from the prior art. Accordingly, allowance of the claims and passage of the application to issuance are respectfully solicited.

Respectfully submitted,

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